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NO DRAWINGS

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(54) COATING COMPOSITIONS

(71) We, THE BEAVER GROUP LIMITED, a British Company of Charnock Road, Aintree, Liverpool 9, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:

This invention is concerned with coating compositions which act as release coatings for wallpaper and other sheet materials adhered to walls or other surfaces with water-based pastes or adhesives. Although the coating compositions of this invention are of general application, as indicated, we will hereinafter refer, for convenience, to their use on walls which are to be wallpapered.

It is frequently necessary and usually desirable when redecorating a room to remove any existing wallpaper from the walls before applying new wallpaper. This is often a difficult and tiresome procedure, especially when the existing paper is still firmly adherent to the wall surfaces.

We have now found that if the walls are first treated with an aqueous coating composition of the kind to be hereinafter described and then, when this coating composition is dry, the wallpaper is pasted onto the walls in the usual way, removal of this paper at any subsequent time (months or years later) is considerably facilitated.

The coating compositions of the invention which we have found to be useful for this purpose are aqueous compositions consisting of, in addition to water, (i) at least one natural or synthetic wax (ii), at least one film-forming polymer selected from polymethyl methacrylate, polyvinyl acetate and vinyl acetate/acrylic copolymers, (iii) at least one dispersion stabiliser, (iv) at least one nonionic or anionic surfactant and (v) one or more incidental ingredients (as hereinafter defined), components (i) and (ii) being dispersed in the aqueous phase.

[Price 25p]

We use the term "incidental ingredients" herein to refer to the ingredients which are added in small quantities to the composition for the purpose of improving its marketability. These ingredients do not have any significant effect on the release properties of the composition provided by the combination of ingredients (i) to (iv) specified above. Typical incidental ingredients are perfumes, reodorants, and preservatives which protect the compositions from biological degradation. A suitable preservative is phenylmercuric acetate.

The generally preferred proportions of these components is as follows (the percentages being by weight, based on the total weight of the composition):

Component (i)	10 to 30%	
Component (ii)	0.5 to 2%	65
Component (iii)	0.4 to 2%	
Component (iv)	0.1 to 1.5%	
Water (and other optional ingredients)	remainder to 100%	

Any natural or synthetic wax, for example paraffin or other mineral or vegetable wax, may be used as component (i) of the compositions. However, when the wall to be coated is likely to be heated, for example as in the case of a chimney breast or those parts of a wall close to a heater the wax used should have a melting point sufficiently high that it does not appreciably soften or melt when the coated wall is heated. In such cases, the wax used will preferably have a melting point about 150°F.

Suitable dispersion stabilisers (component (iii)) for use in the compositions include, for example, water-soluble gums, ammonium caseinate, and cellulose ethers and esters, such as sodium carboxymethylcellulose or hydroxyethylcellulose.

A typical surfactant for use in the invention is sodium lauryl sulphate, but any fatty acid sodium salt may be used. The presence of a surfactant in the composition facilitates the formation of the dispersion.

It is also possible to use, in place of two separate components (iii) and (iv) one compound which acts both as a dispersion stabiliser and as a surfactant.

- 5 It is preferred that the compositions of the invention should additionally include a fatty acid and a water-soluble basic compound since the presence of these facilitates the preparation of the wax dispersion. Suitable fatty acids include, for example, those derived from tall oil, linseed oil and soya oil. Among the water-soluble basic compounds which may be used are, for example, aminomethyl propanol and ammonia. The preferred proportions in which these components are used is from 0.5 to 2% of the fatty acid and from 1 to 2% of the base (the percentages being by weight, based on the total weight of the composition).

- 20 In the compositions of the invention, the wax and film-forming polymer are dispersed in the aqueous phase. Any suitable apparatus may be used to prepare the dispersion. The presence of the water-soluble base and the fatty acid facilitates the formation of the dispersion by reducing the amount of mechanical shear required.

- One method of preparing a composition of the invention comprises melting a suitable quantity of the wax and adding to it the fatty acid. The molten wax is then added to the water which has been heated and contains the water-soluble base. The polymer and surfactant are added and the mixture placed in a high speed disperser. The resulting dispersion is then stabilised by the addition of a suitable stabiliser. The particle size of the dispersed wax and polymer should be such that the dispersion is stable and pourable. If the particle size is too large, the particles tend to agglomerate and the dispersion is unstable, whereas if the particle size is too small, the dispersion will be too viscous. The particle size depends on the conditions used to form the dispersion and is easily controlled to achieve the desired result.

- The compositions of the invention may be modified by replacing the wax of component (i) by polyethylene, the other components of the compositions remaining unchanged. However, since polyethylene dispersions are ordinarily difficult to prepare directly from polyethylene itself, they are usually prepared by effecting the polymerisation of ethylene as a dispersion polymerisation. The polyethylene dispersions so obtained, one example of which is "Cirrasol P.N." (trade mark) are commercially available and are suitable for use in the compositions of this invention. In preparing a polyethylene-containing composition of the invention, a polyethylene dispersion is simply mixed with components (ii), (iii) and (iv) of the composition and water as

necessary. Since the polyethylene is pre-dispersed, there is no necessity to include in the composition the fatty acid and water-soluble base compounds referred to above.

The preferred proportions of polyethylene in such compositions is from 10 to 30% by weight of the total composition and the preferred proportions of the other components are as stated above.

The compositions of the invention are non-toxic and completely safe to use, even in confined and ill-ventilated areas. When they have been applied to a wall, for example by brushing, spraying or roller coating, and allowed to dry, pasted wallpaper may be applied to the wall in the usual manner.

Normally, when one coat of one of these compositions has been applied to a wall, this is sufficient to facilitate the removal of several subsequent applications of wallpaper. In general, it will be possible simply to peel the old wallpaper from the coated wall without resorting to conventional wet-scraping techniques.

The compositions of the invention will generally contain at least about 60% by weight of water and, as such, are suitable for application to a wall. However, the compositions may be made in more concentrated form and subsequently diluted to a solids concentration suitable for use by the retailer or the user. The compositions may, in general, be conveniently concentrated to a wax content of about 40%, in which case dilution with about 3 parts of water to one part of the concentrate will be necessary before use.

The following Example of a composition of the invention is given by way of illustration only.

EXAMPLE

	% w/w.	
Water	76.00	
Sodium Lauryl Sulphate	1.00	110
Amino-Methyl Propanol	1.40	
Hycryl A.1000	1.00	
Lactic Casein	0.40	
Gum Arabic	2.10	
Ammonia (0.910)	0.30	115
150 - 155°F Paraffin Wax	12.30	
Tall Oil Fatty Acids	1.00	
Reodorant	3.60	
Polymethyl Methacrylate (as 50% by weight solids dispersion in water)	0.86	120
Phenyl Mercuricacetate (Preservative)	0.04	
	100.00	125

WHAT WE CLAIM IS:—

1. An aqueous composition suitable for use in forming release coatings for sheet materials which consists of in addition to water,

- (i) at least one natural or synthetic wax,
 (ii) at least one film-forming polymer selected from polymethyl methacrylate, polyvinyl acetate and vinyl acetate/acrylic copolymers,
 5 (iii) at least one dispersion stabiliser,
 (iv) at least one nonionic or anionic surfactant, and
 (v) one or more incidental ingredients (as hereinbefore defined),
 10 components (i) and (ii) being dispersed in the aqueous phase.
2. A composition according to claim 1, wherein component (i) is a paraffin wax.
- 15 3. A composition according to claim 1 or 2, wherein components (i) has a melting point above 150°F.
4. A composition according to any of claims 1 to 3, wherein component (iii) is a
 20 water-soluble gum, ammonium caseinate, a cellulose ether and/or a cellulose ester.
5. A composition according to claim 4, wherein component (iii) is sodium carboxymethyl cellulose or hydroxyethylcellulose.
- 25 6. A composition according to any of claims 1 to 5, wherein component (iv) is a fatty acid sodium salt.
7. A composition according to any of claims 1 to 6, which additionally contains
 30 a fatty acid and a water-soluble basic compound.
8. A composition according to claim 7, wherein the fatty acid is one derived from tall oil, linseed oil or soya oil and the basic
 35 compound is amino-methyl propanol or ammonia.
9. A composition according to claim 7 or 8, which contains from 0.5 to 2% of the fatty acid and from 1 to 2% of the basic
 40 compound, the percentages being by weight, based on the total weight of the composition.
10. A modification of the composition claimed in any of claims 1 to 9, wherein the wax of component (i) is replaced by 45 polyethylene, the other components of the composition remaining unchanged.
11. A composition according to any of claims 1 to 10, wherein in place of separate components (iii) and (iv), a single compound 50 is used which acts both as a dispersion stabiliser and as a surfactant.
12. A composition according to any of claims 1 to 11, which contains a preservative to prevent micro-biological degradation. 55
13. A composition according to any of claims 1 to 12, wherein the proportions by weight, based on the total weight of the composition, of components (i) to (iv) are:
- | | | |
|-----------------|-------------|----|
| Component (i) | 10 to 30% | 60 |
| Component (ii) | 0.5 to 2% | |
| Component (iii) | 0.4 to 2% | |
| Component (iv) | 0.1 to 1.5% | |
14. An aqueous composition substantially as herein described in the Example. 65
15. A concentrate which can be diluted with water to form a composition as defined in claim 13.
16. A method of making an aqueous composition as claimed in any of claims 7 70 to 9, which comprises forming a mixture of molten wax and the fatty acid, adding the mixture to heated water containing the basic compound, adding components (ii) and (iv) and dispersing the mixture in a high 75 speed disperser, and stabilising the resulting dispersion with component (iii).

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